

Appl. No. 09/508,512
Amendment dated: July 26, 2004
Reply to OA of: May 4, 2004

REMARKS

Applicants acknowledge with appreciation the indication that claims 6, 20, 21, 34-37 and 39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants have made every effort to place the application in condition for early allowance. All of the claims have been canceled from the application without prejudice or disclaimer. Applicants believe the present amendments place the application in condition for allowance notwithstanding that the amended claims do not correspond exactly to the subject matter indicated to be allowable in the Official Action. However, all of the claims now present in the application are believed to be in full compliance with 35 USC 112 and are clearly patentable over the references of record.

Applicants have amended the claims in that claim 42 corresponds generally to prior claims 23 and 24 but are not limited to the specific hygroscopic materials as previously claimed in amended claim 1 which has been cancelled without prejudice or disclaimer. All the claims have been canceled without prejudice or disclaimer. Claims 43, 44 and 46-59 correspond generally to canceled claims 25 to 40. Claims 60-65 correspond to previous claims 2-7. Claim 66 recites the steps of former claim 11 however with the apparatus of new claim 42. Claims 67 and 69-77 correspond to old claims 14-22 and 41. Claims 45 and 68 have been added and are based on the specification at page 13, line 35. Since the new claims do not correspond exactly to the cancelled claims, the limitations in each new claim need to be fully considered in evaluating the patentability of the subject matter as now claimed.

The rejection of claims 1, 3-5, 8, 23, 29, 30 and 32 under 35 U.S.C. §102(b) as being anticipated by Kwasnick et al. has been carefully considered but is most respectfully traversed in view of the amendments to the claims and the following comments.

Appl. No. 09/508,512
Amendment dated: July 26, 2004
Reply to OA of: May 4, 2004

Applicants wish to direct the Examiner's attention to MPEP § 2131 which states that to anticipate a claim, the reference must teach every element of the claim.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed Cir. 1989). The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed.Cir. 1990).

Applicants respectfully submit that the cited references do not anticipate the apparatus for monitoring the activity of tritiated water vapour and other hydrophilic tritiated species in a gas as defined in claim 42.

New claim 42 is directed to an apparatus for monitoring the activity of tritiated water vapour and other hydrophilic tritiated species in a gas which comprises:

(a) a hygroscopic scintillator element comprising a solid scintillator material having a layer of hygroscopic material thereon; and

(b) means for measuring light emitted from said hygroscopic scintillator element, the amount of light emitted from said scintillator element providing a measure of the tritium containing species in said gas;

wherein the hygroscopic scintillator element is provided in a substantially light tight container including inlet means adapted to allow the gas to contact the scintillator element without permitting entry or exit of light to or from said container.

The examiner will appreciate that the provision of this hygroscopic layer on the scintillator material permits a continuous and reversible exchange of moisture with the gas in the direct vicinity of the scintillator material. Indeed, the inventors have found that such a scintillator element featuring a hygroscopic layer thereon permit an improved

Appl. No. 09/508,512
Amendment dated: July 26, 2004
Reply to OA of: May 4, 2004

and selective detection of tritiated species in a gas. This apparatus allows a real time and **continuous** monitoring of the tritiated species in a gas.

US 5,132,539 to *Kwasnick* provides a sealed scintillation detector, wherein the scintillator is in a sealed enclosure. In fact, the scintillator is separated from the gas to be monitored by a window. That is the gas to be monitored is **not** brought into contact with the scintillator. Furthermore, *Kwasnick* does **not** disclose the provision of a hygroscopic material on the scintillator, but simply mentions that a dessicant may be provided around the scintillator to absorb small amounts of moisture that may diffuse through the seals (and damage the scintillator).

By contrast to the detector disclosed by *Kwasnick*, in the present apparatus the gas to be monitored is brought into **contact** with the scintillator element. Furthermore, the scintillator material is **covered** (not surrounded) by hygroscopic material in order to achieve a continuous and reversible exchange of moisture with the gas on the surface of the scintillator material. This is not possible with the sealed detector of *Kwasnick* which does not provide any selectivity for tritiated species (*Kwasnick* does in fact not mention tritium at all).

It follows that the present apparatus as claimed in claim 42 is **not** anticipated by *Kwasnick*. Accordingly, it is most respectfully requested that this rejection be withdrawn in view of the above comments and amendments to the claims.

The rejection of claims 1, 3, 5, 8, 9-11, 17, 23, 28, 29, 30 and 31 under 35 U.S.C. 102(b) as being anticipated by Schellenberg has been carefully considered but is most respectfully traversed.

Turning now to the *Schellenberg* reference (US 4,562,158), it proposes to replace the traditional method of detecting chemicals containing ^{14}C or ^3H which have been soaked up or scraped on to strips of paper or a similar carrier. In the traditional method, the disposable sampler is soaked in liquid scintillation solution to release the contents; and the liquid scintillation solution is next put in a liquid scintillation spectrometer to measure how much radioactive substance has eluted from the carrier.

Appl. No. 09/508,512
Amendment dated: July 26, 2004
Reply to OA of: May 4, 2004

Schellenberg modifies this process by applying (mixing) scintillating chemicals to the carrier and then puts the modified carrier into a liquid scintillation spectrometer.

In other words, *Schellenberg* discloses a **batchwise** process of measuring radioactive substances trapped in a carrier material. *Schellenberg* does not disclose an apparatus as defined in claim 42 which comprises a solid scintillator material having a layer of hygroscopic material thereon and having an inlet for the gas to be monitored to come into contact with the scintillator element while permitting a simultaneous measurement of the tritium activity.

The apparatus of claim 42 is thus **not** anticipated by *Schellenberg*.

As already mentioned, the provision of the thin layer of hygroscopic material on the scintillator material permits to achieve high selectivity and sensitivity levels.

As explained in the present application on page 3, lines 19-30 (PCT pamphlet), such an apparatus advantageously allows tritiated water vapour or other hydrophilic gas species, such as, for example, tritiated ammonia, tritiated methanol or the like to enter or exchange tritium, holding the tritium from said species in close proximity to the surface of the solid scintillator material.

The range of beta-emission from tritium (average about 0.4 microns in liquid water) allows the tritium in the hygroscopic layer to excite the solid scintillator component of the hygroscopic scintillator element.

It is to be noted that the apparatus of claim 42 is neither disclosed nor suggested by the cited references. Accordingly, it is most respectfully requested that this rejection be withdrawn.

The rejection of claims 2, 12-16, 18, 19, 22, 24-27, 33, 38 and 40 under 35 U.S.C. 103(a) as being unpatentable over *Schellenberg* in view of Great Britain Publication 1,092,797 to Atomic Energy and Lefkowitz et al. has been carefully considered but is most respectfully traversed.

Applicants wish to direct the Examiner's attention to the basic requirements of a prima facie case of obviousness as set forth in the MPEP § 2143. This section states that to establish a prima facie case of obviousness, three basic criteria first must be

Appl. No. 09/508,512
Amendment dated: July 26, 2004
Reply to OA of: May 4, 2004

met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Section 2143.03 states that all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). "All words in a claim must be considered in judging the patentability of that claim against the prior art." In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

According to the Office Action, a combination of *Schellenberg* and *Atomic Energy* (GB 1,092,797) would make the present invention obvious. It is respectfully submitted that there is no way that a skilled person would even have tried to combine these two documents since they relate to fundamentally different techniques of analysis.

As already mentioned, *Schellenberg* describes a batchwise process where scintillator material is mixed with a carrier material, contacted with a gas or liquid to be measured, and then put in a liquid scintillation spectrometer.

Atomic Energy discloses a nuclear radiation detector of particular geometry, wherein a gas to be monitored is made to flow in contact with walls made from scintillation material. This detector allows a continuous monitoring of a gas. However, there is no mention therein that the scintillation material could be covered by hygroscopic material and that it would provide any advantageous effect.

As a matter of fact, there is **no indication in the cited references** whatsoever that the provision of a hygroscopic layer on a scintillator element of an apparatus for

Appl. No. 09/508,512
Amendment dated: July 26, 2004
Reply to OA of: May 4, 2004

continuous monitoring of tritiated species in a gas would permit to improve the sensitivity and selectivity of such an apparatus.

It follows that the apparatus of the invention as defined in claim 42 is not obvious in view of the cited prior art.

Claim 66 relates to a method for monitoring the activity of tritiated water vapour or other hydrophilic tritiated species in a gas which uses the apparatus of claim 42. Since none of the cited references anticipates nor suggests the apparatus of the invention, it is clear that the references cannot disclose a method using such an apparatus.

It follows that the present method is also novel and non-obvious. Accordingly, it is most respectfully requested that this rejection be withdrawn.

In view of the above comments and further amendments to the claims, favorable reconsideration and allowance of all of the claims now present in the application are most respectfully requested.

Respectfully submitted,
BACON & THOMAS, PLLC

By: Richard E. Fichter
Richard E. Fichter
Registration No. 26,382

625 Slaters Lane, 4th Fl.
Alexandria, Virginia 22314
Phone: (703) 683-0500
Facsimile: (703) 683-1080

REF:kdd
A04.wpd

August 4, 2004